ASTRONOMICAL SOCIETY OF LONDON.

April 7, 1830. No. 27.

The following communications were read:—

1. Observations of the Planets made at the Imperial Observatory of Vienna, in the year 1828, by J. J. Littrow.

In this paper Professor Littrow communicates the *apparent* places of the planets in R. A. and N. P. D., as observed on the meridian of Vienna, corrected for refraction and parallax. The results are compared directly with Schumacher's ephemeris, and the errors of the tables ascertained.

	Limits of Errors of the Tables.			
	R.		N.P.D.	
	s	s	″	″
58 obs. of Venus ..	+0,22	−0,98	+18,7	− 5,8
46 —— Mars	+0,89	−0,32	+ 4,5	−24,0
5 —— Vesta ...	....	....	....	....
44 —— Jupiter ..	+0,42	−0,72	+ 2,6	− 6,8
20 —— Saturn ..	+1,35	....	....	− 7,6
35 —— Uranus ..	....	−1,42	....	− 9,8

The errors are to be applied, with their proper signs, to the *tabular* places, in order to obtain the *true* and *observed* places. The errors in the greater number of planets have periodic values, which are not always small; and, consequently, the Tables, or rather the elements from which they have been constructed, are susceptible of considerable improvement. This appears to be eminently the case with *Uranus*, for which the differences in R. A. are very great.

Two catalogues of the N.P.D. of Bessel's 45 fundamental stars follow; the first reduced to 1829, as determined by the observations made in the year 1828, and compared with Bessel; the second reduced to 1830, as determined by the mean of three years' observations, (during which time the meridian circle has been in use), compared with Bessel, and also with the fundamental catalogue of the Astronomer Royal, in the *Nautical Almanac* of 1830. Professor Littrow remarks, that the observations of Vienna fall generally between those made at Greenwich and those at Konigsberg. The

differences between the three observers are, however, greater than might be wished, and they are remarkably large in *α Aquarii*, *α Canis minoris*, α^2 *Capricorni*, *α Pegasi*, *α Persei*, and *α Virginis*.

2. Observations of Occultations of Stars by the Moon, at Mr. South's Observatory, Kensington.

1830.		Sidereal Time. h m s	
Mar. 28.	θ^1 Tauri.....	Im. 7 38 2,75	mean of 4 observers. No projection.
	θ^2 Tauri.....	Im. 7 45 23,49	mean of 5 observers. Ditto.
*	R.A. $4^h\,19^m\,7^s$ / N.P.D. 74° 14′	Im. 7 54 10,35	mean of 2 observers.

Lord Ashley, with the 19-feet achromatic, and Mr. South, with the 5-feet equatorial, saw the star projected on the moon's disc by a quantity equal to its own diameter. Five other observers saw no projection.

* R.A $4^h\,21^m\,40^s$ / N.P.D. 74° 34′ lost at $9^h\,22^m\,23^s,41$, near to the illuminated cusp; doubtful whether occulted or no.

85 *Tauri*. Im. $9^h\,26^m\,26^s,41$. Lord Ashley saw the star distinctly within the moon's disc: 5 other observers did not notice any projection.

		h m s	
April 5.	*τ Leonis*.	Im. 8 6 13,0 / Em. 9 23 3,5	by Mr. Stratford.

3. *Extract of a letter from Charles Perkins, Esq. to the President:—*

"I observed most of the occultations last night (March 28). My friend Mr. Holland was with me, and we both considered the stars 99 Tauri, and Piazzi IV. 102, to have been visible on the moon's disc. Each observer used a 42-inch achromatic with $2\frac{3}{4}$ aperture, mine with a power of 120, and Mr. Holland tried one of his own eye-pieces, the power of which he estimated at 336. With this he observed the star distinctly, and the moon's dark limb well defined."

4. On a method of ascertaining any inaccuracy in the formation of the Pivots of Transit Instruments, &c., or any subsequent derangement in their shape. By Lieut. Peter Lecount, R.N.

On visiting the workshop of M. Repsold of Hamburgh, Lieut. Lecount's admiration was excited by the accurate manner in which the German artists execute the steel pivots for their astronomical instruments. The apparatus for detecting flexure used by M. Repsold consists of a series of inverted levers; and on considering this and Reichenbach's *lever of contact*, Mr. Lecount was led to conceive that both of these might be advantageously replaced by a single instrument, on the construction of the wheel pyrometer.

If we conceive a cylindrical pivot to rest either in a Y or upon a smooth plane, and a flat piece to be applied to its upper surface, it is clear that, when the pivot is turned round, any deviation in it from the circular form will cause a motion up or down in the flat piece; and if this be connected by rack-work with the circum-

ference of a circle, which turns freely round its centre, a rotatory motion will be communicated to the circle. This may be readily magnified to any extent that may be deemed advisable; and, in the opinion of Mr. L., an apparatus thus constructed will have the same advantages over those employed by Repsold and Reichenbach that the modern wheel pyrometer possesses above the old system of combined levers.

5. "Fourth Series of Observations with a 20-feet Reflector, containing the mean places and other particulars of 1236 Double Stars, as determined at Slough in the years 1828 and 1829 with that instrument (the greater part of them not previously described). By J. F. W. Herschel, Esq."

The observations of the places in right ascension and polar distance of all the double stars observed by the author between the 17th of March, 1828, and the end of 1829, with the 20-feet reflector, at Slough, accompanied with descriptions, and, in the majority of cases, with micrometrical measures of their angles of position, are communicated in this paper, arranged in order of right ascension for convenience of reference, and form a continuation of his previous communications on the same subject. The total number of double stars catalogued in this paper is 1263, of which nearly 1000 are new; the remainder have been already before observed, and belong to the catalogues of Sir William Herschel, Mr. South, Mr. Struve, &c. They are all, however, arranged in one list, the new ones only being designated by numbers continued onwards from 1000, the last of the preceding catalogues. Among the stars observed occur several of those which are now well ascertained to have an angular motion round each other; such as *η Cassiopeæ*, *γ Virginis*, and 61 *Cygni*. Of these, the author remarks that the two latter have changed quadrants, and passed from the northern to the southern halves of their orbits, since their last measurement by Mr. South in 1825; that the same is true of another very remarkable binary star, *σ Coronæ*, which is now far advanced in the south following quadrant; and that *η Cassiopeæ* is on the point of making the same decisive change in the same direction, and will probably have completed it before the year 1835; thus rendering the decade 1825–1835 remarkable as a chronological epoch, since a similar concurrence will not take place again for a great many thousands of years.

J. MOYES, TOOK'S COURT, CHANCERY LANE.